The works of Brett Nortje part 42 [19th of March 2014]

Relativistic quantum chemistry.

Relativistic quantum chemistry invokes quantum chemical and relativistic mechanical arguments to explain elemental properties and structure, especially for the heavier elements of the periodic table. A prominent example of such an explanation would be the fact that the color of gold (in that it is not silvery like most other metals) is explained via such relativistic effects.

The term "relativistic effects" was developed in light of the history of quantum mechanics. Initially quantum mechanics was developed without considering the theory of relativity.[1] By convention, "relativistic effects" are those discrepancies between values calculated by models considering and not considering relativity.[2] Relativistic effects are important for the heavier elements with high atomic numbers. In the most common layout of the periodic table, these elements are shown in the lower area. Examples are the lanthanides and actinides.[3]

Relativistic effects in chemistry can be considered to be perturbations, or small corrections, to the non-relativistic theory of chemistry, which is developed from the solutions of the Schrödinger equation. These corrections affect the electrons differently depending on the electron speed relative to the speed of light. Relativistic effects are more prominent in heavy elements because only in these elements do electrons attain relativistic speeds.[citation needed]

So, this is mainly for the higher numbered elements near the bottom of the periodic table. it is only when elements are heavy - have a lot of orbitals - that they become so dense, you could say.

If the electron spins quicker the higher the 'material number' is, the closer it will be to disappearing, as if the electrons wee to go the speed of light, they would disappear and the element would fail. so, it is safe to say that the softer something is, the more stable it is. if it were platinum it would be closer to disappearing, yes?

Now, the softest things we know of are gases. they must have few orbitals. think of a wheel spinning - the slower you spin it the more likely it is that the wheel will be there after you finish spinning it, but, if you spin it too fast, it might break, like a bicycle, okay?

If you want to find the number of orbitals for the element, all you need is the number. it is numbered from hydrogen to some metal, and, you need to count up in orbitals, remembering the system for counting. or, you could do it the other way around, of course.

Now, some people think that electrons travelling at half the speed of light will affect the element. of course it will! if the element is having so many electrons, it will make it more of a conductor, yes? if the element is liquid, as opposed to solids, it is actually safer to work with, as, it is further away from disappearing.

If you were to look for solubility though, you will find that the lower the periodic number, the more soluble it is. this means you have less orbitals for a more soluble substance. of course, the less 'activity' it has, the more 'friendly' it is. this means, if you were to count the numbers of the elements or the number of the orbitals, you will find that the lower the total leaves you with something more soluble.

So, we can tell if a mixture is soluble by counting the orbitals. of course, this requires some work! for each oxygen atom, for example, it will become less soluble, except where there are balancing elements, like hydrogen. likewise if you have too much hydrogen with too little of something else, you will find that it will become solid, like nitrogen four, remember? that gas becomes a solid! adding more nitrogen to it will result in it disappearing too!

Now, if the elements in use are balanced, where there is so much of a dominant element and enough of the other elements to bond to them, then they will stay stable. if the elements are too unbalanced, it will disappear, as following the electrons being too plentiful, the stuff will overexcite and become light or something, i think.

So, if you are handed a solution, you can know quickly if it will work, and what it will do. this is based on my previous examples in the other posts about organic and inorganic chemistry.

What solution is it though?

An organic solution cannot have any metaloids or metals in it. this type of solution will always have orbitals ranging in the lower regions of the totals, as, they need to be 'fluid.' if they are not fluid, they are not 'watery' or biomass and will harm you. so, if the orbitals come in sets of s2 and stuff, you can know it is organic. if it is a lot of different elements, or, the element total for the solution is high, then they need to observe that the mixture or substance gets denser, yes? now, think to yourself, is coffee or water more dense? is blood or urine more dense?

For inorganic chemistry, you need to observe that the density of the 'solution' has as many individual elements as it can, as it wants to be dense. this is good in inorganic chemistry! this makes fuel dense enough to use in cars and machines. but, how do you know how many elements make up each mixture? if you have the amount of orbitals, it is possible, but time consuming.

Maybe you need to acknowledge prime numbers? if the solution is prime, it might be organic, and, if it divides into two, it must be inorganic, yes? think of all those eighteens and stuff for inorganic chemistry, and all those low numbers of orbitals for organic chemistry? could be a thought you know.

So, if you were to have to explain what goes into a solution, you need to think rationally about what you think goes into a solution. if you think a bit of carbon goes in, think it out with your peers. they may be able to help discern what they think goes in - everybody has some idea! it is all common sense. of course some carbon goes into coffee - this is called 'carboloading' isn't it? think if something is used in creams from pharmacies, if you were a cream to get rid of something, of course you going to use some lethal acids or something. just use your melon, it is all quite obvious, as long as you have gone over the 'obvious' with your teacher.

Even more chemistry!

If you were to mix things together, you will get other things. if you were to want to mess around, you will know what everything smells like at least, won't you? but, what makes what, that is the question!

If you need to mix all sorts of things together, you need to separate metaloids and the rest, as, they will not really bond into a metal if there is oxygen in it will it? if the solution includes things like H20, then you need to observe that hydrogen and oxygen are gases, but, with the folding of hydrogen into H2 there is a gas becoming a liquid. i suppose H3 would be a solid? this means anything with a 'folded' - more than one element at a time - equation, equals a liquid or a solid, depending where you start, yes?

Quote by: **http://en.wikipedia.org/wiki/Chemical_bond**

> *A chemical bond is an attraction between atoms that allows the formation of chemical substances that contain two or more atoms. The bond is caused by the electrostatic force of attraction between opposite charges, either between electrons and nuclei, or as the result of a dipole attraction. The strength of chemical bonds varies considerably; there are "strong bonds" such as covalent or ionic bonds and "weak bonds" such as dipole–dipole interactions, the London dispersion force and hydrogen bonding.*
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> *Since opposite charges attract via a simple electromagnetic force, the negatively charged electrons that are orbiting the nucleus and the positively charged protons in the nucleus attract each other. An electron positioned between two nuclei will be attracted to both of them, and the nuclei will be attracted toward electrons in this position. This attraction constitutes the chemical bond. Due to the matter wave nature of electrons and their smaller mass, they must occupy a much larger amount of volume compared with the nuclei, and this volume occupied by the electrons keeps the atomic nuclei relatively far apart, as compared with the size of the nuclei themselves. This phenomenon limits the distance between nuclei and atoms in a bond.*
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> *In general, strong chemical bonding is associated with the sharing or transfer of electrons between the participating atoms. The atoms in molecules, crystals, metals and diatomic gases— indeed most of the physical environment around us— are held together by chemical bonds, which dictate the structure and the bulk properties of matter.*

If you have to draw the solution, then you might need to first know where the atoms go, and, how many bonds they have between them. if you were to have some oxygen and some N, and the solution was N4O2, then, as the caffeine structure goes, you would have all your N on the inside and all your O on the outside. in this case the O has two bonds to the outside where it is situated, and the N has some two bonds in the inside. we want to know, how many bonds are there, what shapes the compound takes, and where they go?

If we were to observe that we know how many elements there are, in our 'formula,' we should be able to see where they go. this would mean, of course, that all the numerous atoms go on the outside of the 'sketch' and the less numerous go on the inside. this is true for simple structures.

For more elaborate sketches, we need to place the atoms so that they do not touch like atoms if they can help it, or, as seldom as possible. if they will bond to each other, then they go to the center of the sketch, with the others being separated as far as possible from each other.

To see how many bonds there are between them, one would need to observe the oxygen having the most complicated bonds. if the inner compounds have advanced bonds, then you would say that they need to be far away from the outer bonds, if they are more numerous in the compound.

To see what shape the compound takes, you need to observe the bonds. if the bonds are all 'doubled' or 'tripled,' then they come out in a straight line. if they are not, then they form a shape with points equal to the number of primary atoms. if the primary atoms were to be a prime number, then they form that, and the others take place as far from each other as possible.

Bonds.

I find that bonds are made to be strong, like in the real world we would build houses that withstand the forces of nature. if we have a simple bond structure, where nothing is doubled, then it will form a series of hexagons. this means that there needs to be a six in the formula, as if the structure was to branch out, well, you always find that there are more than one atom type in the compound.

So, if you were to observe the structure, you need to make as many hexagons or six vector shapes as possible. each of these shapes will be of the same atom type, and only where they bond to something else will they change. the thing is, when working around the outside, they never form hexagons.

If you were to observe the simple structure, it is simple because it is so strong, with many bonds. if you know it has many bonds, then you will be able to calculate where they go, yes? ask your teacher for more on how to decide if it is simple or not, as simple means it has double or triple type bonds. i would say that for each six atoms there needs to be twelve bonds, doubled over, and for every eighteen, there needs to be three. if not, then it folds and stuff.

But how do we know if it folds in three dimensions? if that is the case of a lot of atoms, then it will fold over to make itself stronger. if the bonds are strong, it will lie flat in two dimensions. so, if the solution has more than twelve atoms with weak bonds, it will fold over. i don't know how to determine what sort of bonds it has before we start to shape it, please ask someone that knows, like your lecturer.